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Environmental mission in Iraq

By THOMAS O'HARA III
Gulf Region Division Public Affairs

Protecting the environment is one of the principles guiding U.S. Army Corps of Engineers operations throughout the world.

One might argue that in a hostile environment such as that in Iraq, attention to environmental concerns would take a back seat to engineering operations.

Those people would be surprised to learn that a focus on preserving natural resources and safe disposal of harmful products has fallen in step with the fast tracked effort to restore Iraq.

"Our job is to make sure we leave the environment of this place no worse than we found it," said Terry Williams, an environmental specialist serving in Iraq, who recently redeployed home to Mobile District.

Williams oversaw environmental impacts by U.S. Army Corps of Engineers operations, and other Coalition activities as Engineering and Construction manager for the Corps Gulf Region Division.

Williams is not alone. Environmental specialists are assigned to all military sites throughout theater to ensure military operations do not adversely affect their areas of operation. "Realistically this is still a war zone," said Williams. "But we still have a responsibility to do the right thing"

Environmental assessments also are done to protect the troops in the field. According to Williams, environmental specialists at forward operating bases (FOB) throughout the theater determine if the air, soil and water are free of pesticides, chemicals, smoke, bacteria, etc., that would harm those serving in the area.

While inspecting a temporary landfill in the Green Zone, Williams ensured that only approved construction debris was being dumped. The site, located adjacent to the Tigris River, is not ideal but served immediate needs for the rebuilding effort. "One day this will all be relocated," said Williams. Once hostilities settle down to a point that an external site can facilitate dis-



Terry Williams inspects the Green Zone landfill to ensure only non-hazardous construction debris are dumped.

posal of construction debris from Green Zone construction, "then this area will be cleaned back to the open field it once was."

His duties also included managing and developing procedures to properly dispose of hazardous materials. Drums of chlorine wash are stockpiled until they can be properly disposed of. In other areas, reusing hazardous materials has helped minimize the impacts of multi-national force operations.

"We're collecting the oil waste from operations and using it as a burn product for some of the electrical generation projects in country such as at the Doura (refinery) project," said Williams. "Simply because a combat environment is not conducive to typical environmentally conscious activities doesn't mean the military, or Coalition, can turn a blind eye to it."

Not only is the multi-national force not turning a blind eye, they are investing substantially so

their efforts here to liberate this once-dominated country don't leave its environment unnecessarily scarred.

When not in the field performing project oversight, Williams spent time at the office combing through baseline assessments of operations throughout Iraq identifying potential environmental concerns and impacts — impacts the multi-national force will one day return to assess and in some cases remediate, or clean up.

When ease of movement within the theater improves, Williams said he is confident his successors will be able to accomplish a lot more on the environmental front.

In addition to monitoring the efforts of the multi-national force, Williams and his counterparts also work with the newly established Ministry of the Environment to develop new policies in Iraq to minimize the damages that occur. **See Iraq on Page 4**



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District restoring historic river

A milestone in the environmental restoration of the historic San Antonio River has been met at the federal level, and its completion now relies upon public participation.

The Fort Worth District completed its draft of the General Reevaluation Report and offered the report for public review and comment until Sept. 24. The public input process also includes two public meetings conducted on September 15 in San Antonio.

At the request of the San Antonio River Authority, on behalf of the city of San Antonio and Bexar County, and under authority of the Chief of Engineers by Section 335 of the Water Resources Development Act of 2000, the U.S. Army Corps of Engineers, Fort Worth District, conducted the GRR study to determine the feasibility of including environmental restoration and recreation as project purposes within the previously constructed San Antonio Channel Improvement Project initiated in 1957 and completed in 1998.

The study investigated the feasibility of implementing measures for restoration of the river's sediment transport function, backwater habitats, wetlands, pool, riffle, run sequences, riparian hardwoods, and to improve the quality and value of habitat for multiple species of fish, birds, and wildlife.

"Though the U.S. Army Corps of Engineers remains committed to the sound flood management practices that produced the channel improvements in the '50s and '60s, our focus today is to ensure that conservation, environmental preservation and restoration be achieved

while still providing communities flood protection," said Col. John Minahan, commander, Fort Worth District.

During the public meetings, citizens had an opportunity to address the contents of the GRR with representatives of the Corps of Engineers, the city of San Antonio, Bexar County, the San Antonio River Authority, and the San Antonio River Oversight Committee.

The GRR presents the Corps' recommended plan for the San Antonio River Improvements Project and embraces the local vision documented in a design guideline and refined during the preliminary design process, both based upon previous community input.

The recommended plan identifies an ecosystem restoration project along the eight-mile reach between Lone Star Boulevard and Interstate Highway 410 south of downtown San Antonio.

It consists of a series of 35 pools, 21 riffles, and 15 chutes, two restored river remnants, nine embayments, and four tributary mouths. The recommended plan also proposes creating a 7.46-acre wetland and restoring 320 acres of woodland to a riparian corridor.

The restoration features are restored and sustained by a pilot channel, 29-riffle structures, two weirs, modification to the existing San Juan Dam, utility, storm water outfall, road, sidewalk, and parking lot relocations, two bridge modifications, channel invert erosion protection, channel slope and over-bank erosion protection, and planting native riparian vegetation.

"Importantly, we will armor the banks to prevent erosion and to maintain flood water conveyance. Combined, these improvements will result in lasting improvements to the riparian and aquatic habitats," said Minahan. "They will reconnect the river to its functions of the past."

The partnership created by Bexar County, San Antonio, the San Antonio River Authority, and the citizens through the San Antonio River Oversight Committee, gives a strong voice to the community and makes it possible for the Corps of Engineers to continue its work there on large-scale projects such as this one, said Minahan.

For more information contact the Fort Worth District Public Affairs Office at (817)886-1313.



U.S. Army photo

(From left to right) San Antonio Councilman Roger Flores, Representative Lila Cockrell, former Mayor of San Antonio Lila Cockrell, Irby Hightower, co-chair of the San Antonio River Oversight Committee, Col. John Minahan, commander Fort Worth District and Bexar County Judge Nelson Wolfe break ground on the Eagleland segment of the San Antonio River Improvement Project.

Chief of Engineers to discuss environment in January issue

Mark your calendar now to read the January 2005 edition of *The Corps Environment* as Chief of Engineers Lt. Gen. Carl A. Strock discusses his ideas on the role the Corps plays in protecting and sustaining the environment and the Corps' continued commitment to implementing the Environmental Operating Principles.

Corps has big hopes for little fern

By MARY BETH THOMPSON
Baltimore District

The fronds of a small, green, feathery fern may do some of the heavy lifting of environmental cleanup. More precisely, ferns may provide an alternative to the heavy lifting.

Baltimore District has been removing arsenic-contaminated soil at 150 residential properties in Spring Valley, a Washington, D.C., neighborhood near American University since 2002. The government conducted chemical weapons research there during World War I when it was an open, rural area. Arsenic was a component of some of those chemical agents.

The Spring Valley team is testing whether some ferns would make useful tools in the arsenic remediation process.

As it stands now, removing soil with elevated arsenic levels involves ripping up yards with mechanical excavators, removing two feet of soil, the landscape and constructed features from the contaminated area. After the removal, the soil, plantings, sidewalks, driveways, patios and walls are replaced.

Each yard requires intensive interaction with its homeowners—information exchange, rights of entry, appraisals, negotiations, scheduling. During the project team's work with the first 20 properties, one homeowner concern emerged head and shoulders above all the others.

"There are some spots where the property owners or nearby homeowners, essentially, said, 'You're not going to touch the trees,'" said Ed Hughes, project manager for the arsenic-contaminated soil removals.

Recognizing that losing ancient trees and shrubs which shade and add character to yards is an emotional issue for people, Hughes looked for other solutions. He pursued a recent Florida discovery that certain ferns were removing arsenic from contaminated soil.

"I knew we had a lot of properties to deal with, and I definitely thought it was worth a try," he said.

Working with Cindy Teeter, a physical scientist with the Corps' Engineering Research and Development Center in Vicksburg, Miss., Hughes is having this green approach studied in Spring Valley. It's called



Photo by Doug Garman

Baltimore District is testing whether some ferns would make useful tools for arsenic remediation in Spring Valley, a Washington, D.C., neighborhood.

phytoremediation—using plants to remove contaminants from soil or water.

Teeter conducted the initial greenhouse study last winter in Vicksburg. She used soil from Spring Valley and several different species of brake ferns, and tested a normal moisture regime and a high moisture regime.

After the plants were grown for four months in the greenhouse, they were harvested. All the biomass, the plant matter above the root, was collected from each individual plant and analyzed.

"Comparing the two, we saw that the wet treatment regime had a significantly higher increase in arsenic concentration than the normal, so we're using that moisture regime here in the field study sites," she said.

Hughes and Teeter identified three Spring Valley locations—two private properties and a section along the fence bordering the Van Ness Reservoir. Edenspace Systems, of Dulles, Va., planted brake ferns called *Pteris multifida*, *Pteris mayii* and *Pteris vittata* in May. The contractor maintains and checks the plants.

Early evidence is positive. The plants are thriving in the soil of Spring Valley.

"The roots have to expand out of the initial potting mix into the soil before they're going to take up arsenic, and it looks like, from what I've seen so far, we're getting very good root development that correlates very well with the above ground growth," Edenspace's Michael Blaylock said. "It looks

like the roots are expanding into the contaminated soil, which is the important thing that we have to have."

Preliminary tests show that the plants are absorbing arsenic. Everyone involved is upbeat about the possibilities of this method.

"It's exciting to do this type of work, because we can see that this has great potential to help us out at a lot of different sites," Blaylock said.

After the ferns are harvested in the fall, Teeter will analyze the biomass and the soil for total arsenic. The data will help determine how effectively the ferns take up arsenic in Spring Valley and the length of time needed to reduce the arsenic in the soil to the cleanup level of 20 ppm.

Because these are tropical ferns, their ability to survive a Washington winter is another question mark.

"We're hoping that the *P. multifida*, which is known to be more cold tolerant, will grow longer into the growing season here to get maximum arsenic uptake," Teeter said. "Over the winter, we will not remove the roots from the soil, but we'll wait until next spring to see if the plants come back."

Hughes expects to have results of the \$150,000 study early next year.

"We are having the tests performed throughout the course of this year," he said. "We will get some facts and figures for how it would perform for us and make decisions early next year, so that for next growing season we can hopefully employ it to the greatest extent it can be used."

Even if the study is successful, phytoremediation would not be able to clean up all of the arsenic contamination in Spring Valley, but it would give the program another tool for getting rid of arsenic that also has great side benefits.

"If it works, phytoremediation would be less disruptive to residents," said Spring Valley program manager Gary Schilling. "It's also a more environmentally friendly and a less costly way to accomplish the work."

The net results would be happier customers and an earlier completion of the arsenic-affected soil removal project. For the Spring Valley team, that's heavy lifting.

For more information contact the Baltimore District Public Affairs at (410) 962-4088.

Communities of practice bring people together

By **PATRICK DELIMAN**

Environmental Community of Practice

What are communities of practice (CoPs)? Am I currently a member of a CoP? Do I have to be in a CoP?

These are just a few of the questions that U.S. Army Corps of Engineers employees are continuing to ask.

Communities of practice exist in every organization.

"Organizational management can create and facilitate CoPs, but they are going to exist regardless of directives and/or input from management," said Ken Gregg, Environmental Community of Practice (ECoP) Community Coordinator. "Basically, CoPs are defined as small groups of individuals that meet together to develop solutions and share knowledge developed through on the job experiences."

The primary nature of CoPs requires a large degree of trust and personal interaction among the group members.

These groups operate primarily because of a sense of professionalism and personal interest in their subject areas.

CoPs tend to be self-managing and self-directing and the rewards for the members tend to be intrinsic rather than financial.

Knowledge Management researchers Chris Kimble and Paul Hildreth suggested that CoPs typically have more in common with a troupe of altruistic volunteers than a band of paid employees.

Why are communities of practice so important to an organization?

One reason is that they process a tacit knowledge base that is extremely valuable to an organization.

As Mohinder Saini, ECoP Program Manager, explained, "Tacit knowledge represents the undocumented knowledge base that employees obtain and share as a result of on the job experiences."

"The trick is creating a Knowledge Man-

agement System (KMS) that encourages CoPs to willingly post and contribute this knowledge in a format that is meaningful, accurate, and timely.

"Employees do not want another Web site full of information junkyards and data museums," he said.

"The primary objective of the eCoP is to promote collegiality and collaboration among USACE employees working in the environmental engineering and science disciplines."

"An effort must be made to ensure that people in the CoPs 'want' to access and use website/KMS to share and exchange information," Saini said.

This knowledge base can assist employees in preventing the "reinventing the wheel" syndrome.

"The primary objective of the ECoP is to promote collegiality and collaboration among USACE employees working in the environmental engineering and science disciplines," said Gregg.

This includes all environmental practitioners across the range of USACE functional areas.

The ECoP will provide a forum for members to share and effectively manage environmental knowledge with available resources from the entire community available to enhance exchange of information to improve organizational performance.

The implementation strategy for the ECoP is found in the Program Management Plan (PgMP).

The environmental community consists of people interested in USACE environmental activities. The environmental community is

not restricted to USACE employees only, but includes individuals from academia, the private sector and other governmental organizations.

Sub-communities will be formed from within the general environmental community. There are no bounds on the number of sub-communities that can be created or removed.

Remediation would be an example of a sub-community. The topic of remediation is very broad and includes numerous sub-activities.

These might include a group of chemists investigating new detection procedures, lawyers working on remediation regulations, engineers developing innovative cleanup procedures, etc.

The remediation sub-community would be the homeroom where these individuals initially meet to stay current with the current information in their fields of interest.

The individual groups, chemists, engineers, lawyers, etc., would represent the various CoPs that participate from the remediation homeroom.

Rather than focusing on the development of formalized specific CoPs, sub CoPs, etc., and associated mandates and assignments for these groups, the ECoP focuses more on the nurturing and facilitation of existing CoPs within USACE.

The ECoP will provide our CoPs a KMS forum for dialogue and documentation of their activities and ensure that this information is available to all employees within USACE.

"The Environmental Community of Practice doesn't own or direct programs. We focus on our capability and knowledge using our talent (our people), our tools (portal, newsletters, etc) and our techniques (Lessons Learned Systems, Subject Matter Experts, sharing, etc)," said Pat Rivers, chief, Environmental Community of Practice.

Iraq

Continued from Page 1

curred prior to Iraq's liberation.

"There's been a lot of damage to the environment in Iraq due to the last 30 years of oppression under Saddam Hussein, but they can recover," Williams said. Containment of spill-

age from oil operations, protection of water resources to minimize disease spread, as well as advancements in industrial waste monitoring, will eventually help the country's 25 million people enjoy a healthier society, according to Williams.

"This is such a beautiful country," he said. "Its history is significant for all cultures, not just

the Iraqis. We owe it to all of us to make sure it is preserved."

Both Williams and O'Hara have returned to their stateside jobs with the Corps of Engineers, Williams to Mobile District and O'Hara to Omaha District. More information on the Gulf Region Division can be found at www.grd.usace.army.mil.

Cheatham Lake staff high on grass

By **JERRY STROTHER**
Nashville District

Hold on—not that kind of grass! Nashville District Resource Manager Larry Nash and his staff are excited about planting and maintaining native warm season grasses on public lands around Cheatham Lake.

The staff partnered with the Natural Resources Conservation Service, Cheatham County Soil Conservation District, and Tennessee Wildlife Resources Agency to establish 9.3 acres of native grasses and 2.3 acres of green firebreak in a field next to Harpeth River Bridge Campground. Work began last year to establish an additional 30 acres of native grasses next to the Extension Farm operated by Tennessee State University on River Road in Cheatham County.

Native warm season grasses, such as big bluestem, little bluestem, indian grass, and switchgrass are valuable for several reasons. They enhance ecological diversity and wildlife habitat on public lands. They grow well during the summer heat and produce abundant seed. They grow in clumps, and the bare ground between clumps provides excellent cover and nesting space for bobwhite quail, cottontail rabbit, and various small mammals. Whitetail deer graze native grasses, and the assemblage of prey species attracts predators.

Early Tennessee settlers migrating westward found native grasses growing in tree-

less areas they called “barrens.” These barrens may have been created by fires either set by Native Americans or started by lightning strikes and maintained by the grazing and trampling of herds of bison, deer, and elk. As settlers built homes and altered the landscape for agriculture, native grasses were replaced by hay and pasture grasses imported from Europe. Controlling wildfires also allowed native grasslands to gradually become forests.

Some introduced agricultural grasses provide very little wildlife habitat. In the southeast, bobwhite quail populations in particular have been adversely affected by widespread loss of suitable open habitat. The first step in the establishment of native warm season grasses is the eradication of the introduced invasive grasses present.

After native grasses are established, the prescribed use of fire is an important tool in their management. Fire prevents the takeover by woody plants that would gradually produce forest cover through the process of natural succession. Periodic burning also helps maintain the clumped structure of the native grassland that provides cover, nesting space, and travel lanes for small mammals and birds that prefer to make their homes on the ground.

“The native grass program is a great way for us to partner with other agencies to improve habitat diversity and aesthetics on open lands we manage,” commented Nash.



Ranger Crystal Tingle inspects this year's new growth of native grasses in the field at Harpeth River Bridge.

“The Natural Resources Conservation Service and Soil Conservation District also use the Harpeth River Bridge area to demonstrate native grasses to farmers who may want to plant them for hay or pasture.”

For more information contact the Nashville District Public Affairs Office at (615) 736-7163.

Bulletin guides solid waste estimates for renovation

By **STEPHEN COSPER**
Engineer Research and Development Center

Now available for download on the Web is Public Works Technical Bulletin (PWTB) 200-1-24, “Quantifying Waste Generated from Building Remodeling.”

This bulletin contains guidance to help Directors of Public Works estimate the volume of solid waste that will be produced in different types of remodeling projects so that they can plan ahead for recycling or disposal.

The U.S. Environmental Protection Agency reports that remodeling projects typically produce more waste than construction projects with the same floor area.

This is because renovation usually involves the two steps of removing and then installing building components, with both activities producing waste.

EPA found that remodeling waste comprises 44 percent of the total construction/demolition waste stream overall.

Unlike demolition waste, which is easy to quantify by simply weighing, wastes from renovation projects are difficult to estimate.

“Renovation” is hard to define, and it's tough to make comparisons because these projects vary dramatically in scope.

Remodeling can include everything from interior cosmetic changes to re-roofing to a complete “gut” of the building.

The PWTB presents a process for estimating

this waste based on three Army renovation projects that represent typical projects Army-wide.

The detailed calculations of waste materials to be produced allow project managers to plan the work with a focus on recycling.

For example, if you know that a given project will generate so many tons of scrap steel, you can plan to have a recycling container onsite to receive it at the proper time.

PWTB 200-1-24 can be downloaded from the TECHINFO Web site at: <http://www.hnd.usace.army.mil/techinfo/CPW/PWTB/pwtb200-1-24.pdf>.

For more information about this bulletin or solid waste issues in general, contact Stephen Cosper at CERL, 217-398-5569, s-cosper@ccer.army.mil.

District hosts National Regulatory Conference

By ANN MARIE HARVIE
New England District

The U.S. Army Corps of Engineers regulators gathered to discuss the latest changes in the Regulatory Program and its future during the annual National Regulatory Conference.

The event, which was held at the World Trade Center Seaport Hotel in Boston, May 24-28, drew hundreds of regulators.

On the first day of the conference, Lt. Gen. Robert Flowers, now former Chief of Engineers, served as the special guest speaker and discussed 2012 and the Corps.

During his presentation, he described the regulators as "soldiers on point for the environment."

"Thank you all for the things that you accomplish and for the work that you do every day," said Flowers.

Flowers said that not many people realize the important work that is performed by regulators.

There is no organization in his mind that has the opportunity and potential to do more for the environment than the U.S. Army Corps of Engineers.

He talked about the Corps 2012 and the communities of practice. "I challenge this community to find ways to help each other out to make your jobs easier," he said.

The former Chief took the opportunity to brief the audience on all of the good work that the Corps is doing around the country and around the world. To conclude his presentation, Flowers presented coins to New England District employees who helped organize the conference. He also honored regulators from other divisions and districts with coins for their accomplishments.

Brig. Gen. Merdith Temple, North Atlantic Division Engineer, addressed the regulators during the introductory portion of the conference.

"I take a look at the large variety of experience that we have here today, not just in regulatory, but in a wide variety of areas that affect the Corps, it's really overwhelming," he said. "As far as I'm concerned when we talk about Communities of Practice, it's pretty much old hat for the Regulatory Division because you have been operating as a Community of Practice for many years."

Lt. Col. Brian Green, Acting District En-

gineer, welcomed everyone to New England.

"I want to say that I have a new appreciation for all of your efforts," he said. "Particularly, I appreciate how much our regulatory project managers work with permit applicants to modify the initial applications to make a permit possible."

The acting commander said that it is an exciting time for the Regulatory Program in New England and across the country.

"Like all of you, we in New England have several controversial and precedent-setting projects to include the Section 10 permit application for a wind farm off the coast of Cape Cod, the highly controversial Long Island Sound pipeline crossings, several hotly contested aquaculture projects involving endangered species and habitats as well as complicated mitigation issues," he said.

"The way we handle these issues affects our ability to maintain the support and the trust of the public, as well as to develop strong relationships with local, state, and federal partners."

Lieutenant Colonel Green said that one thing that he has learned since he has been with New England District is the tremendous amount of work that goes into a permit application before a decision is made.

"The average person doesn't realize how much the Corps' Regulatory Program does with permit applicants before they get to a permit decision," he said.

Other topics discussed on the first day of the conference included the Future Direction of the Regulatory Program Headquarters by Regulatory Chief Mark Sudol, and the Future Direction of the Army by Assistant Deputy to the Assistant Secretary of the Army for Civil Works Chip Smith.

The beginning day of the conference concluded with an Environmental Roundtable discussion with members of the Federal Highway Administration, the Environmental Protection Agency, the Fish and Wildlife Service and the National Marine Fisheries Service.

The second day of the event began with a presentation entitled "Managing Regulatory Stress" by Lee Stolfus and Al C. Restivo.

The remainder of the day centered on information workshops with topics that included Mitigation Action Plan, Wetland Manual Revisions and Functional Assess-

ments; Peer Review Panel Findings; Solid Waste Authority of Northern Cook County and Government Accountability Office Report Review; and Workload and Performance Indicators.

The third day of the Regulatory Conference focused on Regulatory Successes and Initiatives. The morning session featured presentations on Eastern Kentucky Steam Assessment Protocol; Appeals; Wind Development Projects; and Water Resources Development Act.

After a short break, the Regulatory Successes and Initiatives continued with presentations on Federal Aviation Administration Programmatic Mitigation Efforts, Application Processing for Department of Housing and Urban Development Projects; Watersheds; and Isolated Waters on the Texas Coast, Streamlining Permit Process for Transportation Project, and Permitting in Arkansas.

During lunch, Sudol presented the Don Lawyer award to three regulators. The recipients were Jerry Sparks from Louisville District for his work developing a stream assessment methodology; Aaron Allen from Los Angeles District for his work in the arid southwest; and David Crosby from Savannah District for his work on several controversial projects in the southeast.

After lunch, attendees left the Seaport Hotel for a Boston Harbor Tour, a Wetland Mitigation Site Tour, and a visit to some of Boston's historic sites concluded the day's activities.

The final day of the conference began with organization meetings to include the headquarters and major subordinate commands meeting; 2012, Project Management Business Process, and Regulatory Branch Chief meeting; Recruitment, Mentor, and Retention Regulatory Staff meeting; and Orientation and Mentoring Programs.

Briefing reports followed the organization meetings, and after a short break, the conference concluded with a wrap-up session.

Topics that were discussed included Regulatory Future Direction Summary, Watershed planning efforts; transportation/energy streamlining efforts; Section 106; Mountain Top Mining; and RIX (Regulatory Information Exchange network).

For more information contact the New England District Public Affairs Office at (978) 318-8777.

Waikoloa project ahead of schedule

By JOE BONFIGLIO
Honolulu District

The Honolulu Engineer District is ahead of schedule in clearing Unexploded Ordnance at the 123,000-acre Waikoloa Formerly Used Defense Site (FUDS) and has initiated a highly successful Restoration Advisory Board (RAB) and an active public outreach program, according to Chuck Streck, HED's Project Manager for Waikoloa FUDS.

"It's going much better than we anticipated," Streck said.

The Huntsville Center of Expertise for Ordnance Studies and HED have achieved a number of project innovations and developments which have resulted in increased efficiency and allowed more land to be cleared than originally projected.

"Originally, it was anticipated that 340 acres would be cleared around the perimeter of Waikoloa Village, yet due to project efficiencies, the total clearance around the Village exceeded 473 acres," Streck said. To date, approximately \$29.6 million has been spent on the project.

The latest innovations include: the use of approved open front blast barricades, the application of recently developed geophysical detecting instruments, the development of finer and more specific anomaly discrimination methods, the refinement and adaptation of program management procedures specific to the project and the active participation of local

communities.

These innovations have helped to avoid community disruptions such as evacuations and road closures and gained more comprehensive support for local development.

Waikoloa FUDS is the largest project in the FUDS system nationwide. Its cleanup is part of the Defense Environmental Restoration Program (DERP), a DoD program administered by the Corps of Engineers. Approximately \$50 million has been programmed for ordnance clearance in Waikoloa during the period of 2002 to 2007.

In July, the Corps began focusing its efforts on 340 acres around Waimea and Lalamilo, according to Roger Van Huss, Pacific Rim UXO program manager for American Technologies, Inc (ATI). ATI is the company HED, working through the Huntsville Center, contracted to locate and remove UXO. Due to project efficiencies, it is estimated that up to 450 acres may be cleared in this area.

On April 12, Rep. Ed Case, of Hawaii's Second Congressional District, met with Streck and workers from ATI to receive an update on the project.

Rep. Case spoke highly of the Corps's efforts and has made funding the cleanup his top priority for Hawaii defense-related projects in requests for Congressional appropriations for fiscal year 2005.

In order to continue informing the public on the status of the clean up, HED and ATI have re-established a public Web site that high-



An excavator carries an aluminum blast shield that is used around potentially unstable unexploded ordnance to protect area homes.

lights which areas have been completed and which are currently being worked on for the removal of potential UXO.

This Web site includes project updates, background, maps of current and completed work areas, links to other websites, and current media reporting on the project. HED encourages the use of this data for disseminating information in the neighborhoods and communities contained within the DERP/FUDS property. The Web site can be accessed at www.atipacificrim.com.

HED also runs a Restoration Advisory Board, composed of local residents and representatives from the police and fire departments. The RAB is very active in all stages of project execution and development.

HED initiated a program to inform the public about the health and safety risks from UXO. This includes an active public outreach program complete with posters, brochures, school/community group educational packages, a safety video, permanent displays, and warning signs. In addition, HED started a program for UXO health and safety support during construction within the project area.

The U.S. Marine Corps used the Former Waikoloa Maneuver Area from 1942 to 1946 as a training camp and live-fire range. This was the largest Marine Corps live fire training area and up to 40,000 troops passed through it during World War II.

For more information contact the Honolulu District Public Affairs Office at (808) 438-9862.



(R to L): Project Manager for American Technologies Inc., Roger Van Huss gives Rep. Ed Case a tour of Waikoloa. Also shown are: a local media photographer; HED FUDS Project Manager Chuck Streck and Pete Hoffman of the Restoration Advisory Board.

Collaborative efforts lead to cost-effectiveness in superfund management

The North Atlantic Division serves the northeastern United States, a highly industrialized area that holds some of the nation's largest and most complex Superfund sites.

About 20 percent of the Environmental Protection Agency's entire National Priority List of uncontrolled hazardous waste sites are within the division's boundaries.

Since the mid 1980's, NAD and EPA Region 2 have worked together to successfully remediate and restore many of these sites.

While the Corps has recently restructured itself to more efficiently serve the military, the nation, and its customers and partners, many of the principles surrounding the Corps' recent reorganization have been in practice for many years in the Corps' support of the EPA Superfund Program.

Since 1992, when a Liaison/Business Manager, chartered by Corps headquarters

to represent the entire Corps of Engineers, was permanently forward-stationed at the offices of EPA Region 2, the relationship between the two agencies has evolved into one of the most successful strategic relationships for both.

One centerpiece of the relationship was to actively embrace the concept of Project Deliver Teams, involving talent from across district and division boundaries.

Since the early '90s, teams from the New York, Philadelphia, Baltimore, Kansas City, and numerous other districts have worked collaboratively in support of Superfund. Through the direct efforts of the business manager, Corps teams were assembled consisting of folks who might come from anywhere within the Corps.

More recently, in an effort to speed up the Remedial Design and Remedial Construction process, the Corps increasingly employed use of Cost Reimbursement Contracts.

A longstanding challenge, though, was

the Corps' preference in using Firm Fixed Price contracts. With the challenge of a large cleanup in a politically sensitive, residential area of New Jersey, the Corps responded to EPA's request for assistance in managing the Federal Creosote Project and responded to the challenge of successfully using Cost Reimbursement Contracts on such a large project.

Michael Scarano, who was the Corps/EPA Business Manager, worked with the New York, Philadelphia, Baltimore, Omaha, and Kansas City districts to assemble a quality PDT that could meet the challenges of the Federal Creosote Site.

The Federal Creosote Superfund Site in Manville, N.J., is one of the EPA's most critical and complex projects being managed by a Corps PDT.

The site, roughly 50 acres, is the location of the former Federal Creosote Company, a creosote wood-treating facility. The company ceased operations in the mid-1960s, and the property was developed into

a mix of 137 residential properties and a commercial shopping center.

Creosote waste product and contaminated soil remained on-site, and its discovery triggered EPA's involvement in 1997. EPA determined that all source product and residually contaminated soil needed to be excavated and disposed of.

Deep excavation of malodorous creosote presented a variety of challenges in how to do the job safely and quickly, with minimal disturbance to the community.

The team included key representation from Omaha District, the Corps' Cost Reimbursement contracting expert; Kansas City District, which handles most of the remedial design and contract procurement for EPA Region 2 work being supported by the Corps; Baltimore District, which would provide critical support of temporary and permanent relocations of affected residents; New York District, which would lead the remedial action (construction) phase; and Philadelphia District, which would also provide critical staffing for the Remedial Action effort.

After presenting the proposal to EPA and EPA's approval of the concept, a project management business plan was created and a PDT was assembled through the coordination of the Corps/EPA Business Manager. Key teammates included:

- EPA Region II Remedial Project Manager (RPM) as the PDT Team Leader.
- The Corps/EPA Region 2 Business Manager, as the Corps' focal point for assembly of the team.
- New York District as the lead construction managers for the Remedial Action Phase.
- Philadelphia District assisting during Remedial Action.
- Baltimore District as the real estate specialist.
- Kansas City District for contracting/procurement and Remedial Design/Technical assistance.
- Omaha District as cost-reimbursement technical expert, assuring that contract specification provided the tools to effectively manage a cost-reimbursement contract and overall quality assurance assistance.

The team members were selected based

on their expertise in the management of large environmental projects and their ability to work closely with private homeowners in the affected community.

A considerable effort was initiated upfront to ensure project success. The team developed a detailed cost tracking system that would serve as a boilerplate for future projects. That effort is now paying dividends on projects that began after Federal Creosote.

The project team broke out the design and contracting for the demolition of the houses on the contaminated areas as separate, Firm Fixed Price contracts leaving only the relatively uncharacterized work for the larger Cost Reimbursement contract phases.

The team conducted asbestos assessments and produced a demolition design package within three months. The team's flexibility and resourcefulness enabled EPA to begin construction in one year.

After completing the excavation design, the team performed in situ waste characterization sampling and analysis. This consisted of drilling on a horizontal grid of 30-foot spacing and sampling at 2-foot intervals to the established depth of excavation.

The waste characterization information was provided on color-coded, easily interpreted excavation grid drawings to guide the contractor in waste segregation and stockpiling prior to off-site disposal. The effort reduced material handling costs and enabled the contractor to engage its disposal subcontractors quickly and to plan and schedule material shipment without additional analysis of the soil.

Early in the project, the team identified odor as a major concern, due to the nature of the creosote contaminant and the project location in the heart of a residential community. Successful odor management was critical to the project because public objection to the odors could potentially stop the job.

This problem was complex because odor is a subjective issue, and public perception of Superfund cleanup could be swayed by the presence of odors.

The design considered several odor control alternatives ranging from a large



Maj. Gen. Robert Griffin, (left to right), Tom Roche and Brig. Gen. Merdith Temple (right) at the Chemical Insecticide Corporation Superfund Site.

pre-engineered fabric structure, to such conventional methods as odor suppressant foams, perimeter mist systems, and covering with plastic sheeting.

The Corps and the remediation contractor conducted an odor control pilot study testing the conventional odor control methods on small areas and monitoring for effectiveness in accordance with the perimeter air-monitoring plan.

Simultaneously, the PFS design was completed and kept on the shelf in the event the pilot study showed that conventional methods were unsuccessful.

Employing a combination of conventional odor control systems has resulted in minimal complaints about odors over the course of three years of deep excavations within the community.

Early in the design process, the team convened in meetings with EPA, the Corps, and the remediation contractor to present various construction-staging alternatives, with their associated costs and

schedule impacts, for discussion and decision-making.

Participants discussed, in an open forum, issues concerning temporary resident relocation, utility relocation, traffic control, productivity, schedule, and funding. The discussions helped EPA make informed decisions that allowed the design to move forward.

The team also developed cost and time savings techniques which are still being used on the project that include:

- A close partnering relationship between the contractor and the government managers through formal and informal meetings in order to produce a quality product in a timely and cost effective manner.

- In-situ post excavation sampling ahead of time, to allow excavation and immediate backfill. This reduces open excavation time, safety concerns and the disruption to the residents.

- The evaluation of odor control up

See Superfund on Page 13



Aerial view of remediation and restoration at the Federal Creosote Lagoon Area B

District receives environmental design award

Award cites Swan Lake Habitat Rehabilitation and Enhancement Project

By ALAN DOOLEY
St. Louis District

More than a decade's planning, partnerships and hard work have gone into Swan Lake, located on the west bank of the southern reaches of the Illinois River, in the Lincoln Land's Calhoun County.

The results have earned the St. Louis District a coveted Chief of Engineers Honor Award for the habitat rehabilitation and enhancement project there.

The 4,600-acre project – part of the Upper Mississippi River System EMP (Environmental Management Program) – is a major element of the Mark Twain National Wildlife Refuge.

It includes the 2,900-acre Swan Lake, 200 acre-Fuller Lake, 950-acres of bottomland forest and 550-acres of farmland.

Located near the similarly restored areas at Stump Lake and Calhoun Point, the total region comprises one quarter of the total wetland and deepwater fish and waterfowl habitats on the lower 80 miles of the Illinois River.

The project was conceived in the late 1980s and only recently completed.

Until it was finished, the near-term future of Swan Lake was as clouded as its turbid, increasingly silt-filled waters. The lake was being heavily impacted by silt from the Illinois River and runoff from surrounding farmlands.

In addition, water level changes and wind-generated waves were increasing the lake's turbidity.

The silt, accumulating at a rate of one-third of an inch per year, was reducing the size of the lake and increasing danger to fish during extremely hot and cold weather.

Loss of acreage and vegetation was similarly driving migratory waterfowl from the area, which lies squarely in a major migratory flyway.

According to Sharon Cotner, the first Swan Lake project manager, "When we began the project, the first thing that struck us was the

opportunity it represented in habitat enhancement and preservation and how supportive and interested the local people, the State of Illinois and the U.S. Fish and Wildlife Service were. We understood early on, how important this area was to them."

Cotner went on to remember, "We focused on what we wanted the area to ultimately look like. Then we identified some 'out of the box' ways to get there such as the partnering with the Natural Resource Conservation Service for the upland ponds to reduce the sediment load in the lake and drawing down the entire lake to solidify the lakebed and encourage plant growth. A big part of the project's success can be attributed to its innovative aspects," she said.

Dave Gates, who also started planning the project more than a decade ago, remembered how difficult it was to secure agreement on even its goals.

"The things that make a water area good for fish are not necessarily good for waterfowl," he said. "In the end we divided the project, emphasizing fisheries in the southern area and waterfowl in the northern area."

Mike Thompson, to whom Cotner handed off the project, reinforced the danger Swan Lake was in.

He said that at some point, without effective restoration steps, water tolerant trees like cottonwoods would have established themselves in increasingly shallow, intermittently-flooded areas and eventually the entire lake would have been lost.

The project sought three improvements: managing water flow to mimic seasonal variations, reducing wind and waves to clear the water and enhance vegetation growth, and constructing deep water habitats to enable fish to survive both extreme heat and cold.

Numerous alternative decisions went into the design to enhance its overall cost-effectiveness and to allow the project to go forward.

A channel was dredged to enable effective water flow into and out of the lake at the best times for fish and waterfowl.

The dredge material was in turn used to build islands to reduce wind turbulence and a levee to limit silt from the Illinois River.

Other innovations included cost-cutting measures such as installing previously used sheet pile steel for structures. "The sheet pile was used during construction at Mel Price Locks and Dam and was slated to be sold for scrap," Thompson noted. "Now that we have shown how to reuse it, we can hardly get our hands on any more of it. Everyone wants it from here to Texas."

Thompson described the project as very complex – a delicate balance of engineering disciplines and environmental management issues.

All that is certain for the long-range future is that the region will continue to change. But for decades to come, a vital connection between the Illinois River and what was a relatively swiftly dying river backwater area has been restored.

For more information contact the St. Louis District Public Affairs Office at (314) 331-8068.



The Swan Lake Project, along with similarly restored areas at Stump Lake and Calhoun Point, comprise one quarter of the total wetland and deepwater fish and waterfowl habitats on the lower 80 miles of the Illinois River.

Biologists honored as organization's charter members

By HANK HEUSINKFELD
Wilmington District

Roughly 25 years ago wetlands were looked at by many in the biological and scientific communities as important ecosystems with several unknown values.

As a result, a few forward-thinking individuals from the U.S. Army Corps of Engineers decided the time was right to plunge into the unique systems and begin serious scientific study.

For the Wilmington District's Bill Adams and Frank Yelverton the area of southeastern North Carolina has been a goldmine for such research. Early in their careers they both took advantage of the area's rich wetlands diversity.

"We're blessed in southeastern North Carolina," said Bill Adams of the Environmental Resources Section. "We've got a tremendous diversity of wetland types around here. We've got all the saltwater marshes, we've got freshwater marshes, freshwater swamps. We've got a wetlands richness that very few other places have. It's a very natural place for something like a wetlands body to take hold."

Twenty-five years later Adams and Yelverton were honored in Seattle as charter members of the Society of Wetlands Scientists, an organization dedicated to further scientific study of wet-

lands. The theme of the 25th anniversary conference was "Charting the Future: A Quarter Century of Lessons Learned." Both were pleased to have been recognized as helping found the organization just over two decades ago.

"Oh yes, it was an honor," said Adams. "I stayed in the organization from 1980 to 1982. I was charter treasurer for those two years and Frank was the charter secretary for about six years."

Disciples of Dick Macomber, a headquarters USACE biologist who spearheaded wetlands research in the 1970s, Adams and Yelverton listened carefully to what he had to say and joined him in a grassroots effort to get others in the scientific community on board.

"The timing was right," Adams recalled. "We had the right mix of people here with the right amount of interest. And I think sociologically the time was right. We had the Clean Water Act, and the courts got us into wetlands protection in the mid-70s. And pretty soon the Corps had jurisdiction over these things and we had to figure out how to regulate and how to manage wetlands."

Adams said the Corps was in its infancy trying to figure out where it should draw wetlands lines. It also had to ask itself, "What is scientifically and legally defensible in a court of law?"

According to Yelverton, that's what drew in Macomber to iron all those things out.

"Dick Macomber worked with the Board of Engineers for Rivers and Harbors," said Yelverton. "He was the one who wanted to raise the standards and professionalism of wetlands science, and he realized that would never happen unless there was an organization out there that promoted wetlands science and promoted competence in wetlands science."

In the beginning wetlands science was dominated by the Corps of Engineers which was assigned responsibility of regulating wetlands. Yelverton said it soon became international.

"There were a few members from Canada. But most of them, I'd say 75 percent, were from the Corps of Engineers. Over the years it's become a lot more diverse. There are still a lot from USACE Regulatory who are involved, but now there are a lot more academia and private wetlands restoration firms who belong to SWS."

Their direct involvement in wetlands science has taken several different paths. But Adams and Yelverton said they feel a sense of accomplishment in helping not only scientists and biologists learn more about wetlands science, but the public as well. Adams said it has to do with a "whole world vision."

"When people come to the coast they want to see these big vistas with salt marshes. That's part of the way we think of the coast," he said. "And everybody wants to see seagulls and terns and everything which are all dependent upon the fishes and the resources and the estuaries. And so it's actually an aesthetics thing, the way you think the world should be aligned when you come and see all of these wonderful things. It's all interdependent. You suddenly realize that if the wetlands are gone you're not going to have any of these things."

Yelverton looks back 25 years when the organization began and today narrows wetlands science to the lowest common denominator.

"The first thing that comes to my mind is from a bumper sticker, 'No wetlands, no seafood.' They do have a value. Without wetlands you have no buffer between the uplands and the water to reduce erosion from wave effects, and they prevent pollution from getting into the system. And you can't forget wetlands provide food and shelter for all kinds of species and organisms."

For more information contact the Wilmington District Public Affairs Office at (910) 251-4646.



Frank Yelverton and Bill Adams stand before acres of wetlands located within the city limits of Wilmington, N.C.

Photo by Hank Heusinkfeld

Geospatial Risk Assessment Modeling System

By ANNETTE L. STUMPF and
LINDA PEYMAN-DOVE

Engineer Research and Development Center

Installation managers know that the spill or release of commonly available toxic industrial chemicals and materials can disrupt activities and threaten human health and the environment. To address this potential threat, a new geographic information system (GIS)-based computer application named Geospatial Risk Assessment Modeling System (GeoRAMS) was developed.

GeoRAMS can determine to what extent geographic areas are affected when 44 different toxic industrial chemicals or agents are released into the air, spilled on the soil, dumped into a water body or injected into a water pipe system. It also indicates when people can safely reoccupy the areas and use the water.

GeoRAMS assesses intermediate, sub-chronic health risks to humans due to exposure between two days and one year. Users can play what-if games to identify locations in the transportation network that pose a high risk so that alternative plans can be developed proactively. They can also model other scenarios and design operational plans for reducing the risk to people and the environment.

The GeoRAMS Solution

Researchers at the U.S. Army Engineer Research and Development Center Vicksburg and Champaign laboratories worked with the U.S. Army Center for Health Promotion and Pre-

ventive Medicine and Argonne National Laboratory to create this unique capability. Initial funding for GeoRAMS has been provided through the Environmental Response and Security Protection Program. The GeoRAMS team has integrated four independent models: Air Dispersion Model, Soil Model, Surface Water Model, and Water Pipe Model with chemical screening levels and the ability to display time-based geospatial results.

Output from the GeoRAMS application can be viewed geospatially through time. The land area, water body or water pipe network is shaded green if the chemical concentration is considered safe for humans, and red if the level is unsafe. Using ESRI ArcGIS Tracking Analyst software, the areas for a site can be viewed through a moving picture changing from unsafe to safe over time. Output can also be viewed through tabular and graphic data.

Scenarios Assessed Using GeoRAMS

The models are integrated so the user can study different scenarios, such as an airplane dropping a chemical that falls on the soil, is washed into a water body by rain, and then eventually is pulled into the inlet of the local water treatment plant that supplies the community and installation with drinking water. Users can create their own scenarios to test by choosing the time, location, chemical agent, duration and method of release. Historic weather conditions are used in modeling the dispersion, extent and duration of the impact to human health.

The user can perform what-if simulations in either a planning mode or an incident response mode to answer the following types of questions:

- Which areas remain unsafe for use or inhabitation following the initial evacuation?
- When can use of contaminated areas or resources such as work areas, training lands, streams, lakes, reservoirs and drinking water, be safely resumed and when should water/soil samples be collected and tested to confirm the analysis?
- Which locations in the transportation system pose the most risk?
- Would it be prudent to shut down certain intersections, road segments or gates during high security alerts?
- How could operational plans be modified to reduce the risk to human health?

GeoRAMS for Installations/Communities

The GeoRAMS software is being demonstrated in FY04 at one Army installation. GeoRAMS development for any location involves site-specific setup of water pipe, water surface, air and soil models. Once those site-specific models have been input, users can run the GeoRAMS software to analyze scenarios, discover vulnerabilities, evaluate designs and plan proactively.

The GeoRAMS team is available to create site-specific models for your installation or community.

For more information contact the Engineer Research and Development Center Public Affairs Office at (217) 373-6714.

Corps employees receive bronze medal in Superfund cleanup

Mary Darling, Project Engineer for the Rapid Response Program, Omaha District, and Todd Trulock, Program Manager for Hazardous, Toxic, Radioactive Waste Program, Jacksonville District, recently received the U.S. Environmental Protection Agency's distinguished Bronze Medal for their work as a team to clean up the Alaric Area Groundwater Plume in Tampa, Fla.

Darling and Trulock were lauded for "creativity and outstanding effort in achieving rapid environmental protection through efficient utilization" in the annual EPA Region 4 awards ceremony on July 22 in Atlanta, Ga.

The Alaric Area Groundwater Plume is the site of greatest concern of the seven Superfund and hazardous waste sites, and two

Brownfields projects in the East Lake and Orient Park communities in Hillsborough County, Fla.

The focused efforts of Darling and Trulock accelerated the project so that remedial design was completed ahead of schedule and remedial action was completed in one year. These timeframes are unusual for a project of such complex scope and magnitude.

"My major challenge on Alaric was simply to get the right people with the right tools in the right place ... and then... get out of the way," said Trulock of his efforts to coordinate the project with the virtual team from the Omaha District, Jacksonville District, EPA (Region 4) and Florida Department of Environmental Protection.

"The project was made very intense by the

short schedule and an end date of September 2003 that could not slip," said Darling. "Also there was a difficult technical problem because Alaric Superfund site had commingled groundwater plumes from two other EPA superfund sites.

"The entire team was running at full speed for months - so managing Alaric wasn't easy, but the entire experience was very rewarding, and fulfilling and we achieved the end goal for the customer."

The cleanup is now in the operations and maintenance phase, which involves treatment of the subsurface aquifer groundwater by chemical oxidation.

For more information contact the Jacksonville District Public Affairs Office at (904) 232-1106.

Seattle District studies bull trout migrations

By **PATRICIA GRAESSER**
Seattle District

In 2001 Seattle District biologists embarked on a study of bull trout behavior that yielded results that surprised even the experts.

Biologists found that unlike the more familiar salmon, which migrate from fresh water to salt water and back to fresh water in a complete life cycle, some anadromous bull trout might make the journey from fresh water to salt water to fresh water in a single day. Where salmon take time to acclimate to water of higher or lower salinity, some bull trout swim through "as fast as their fins can take them," according to biologist George Hart.

The district started the study to answer questions about impacts from hydraulic dredging in the Snohomish River in western Washington State. Seattle District needed to determine for the U.S. Fish & Wildlife Service whether or not bull trout were in the Snohomish River

during the planned dredging period.

The team captured and tagged trout then installed hydrophones at various places to track the tagged fish.

"In the first year, we found that the tagged fish were not there during the period we planned to dredge," said Hart.

As word of the study spread, more agencies wanted to be involved. Some offered boats and crew, some provided fish catching and tagging help. The study scope also expanded to reach from the Snohomish north to include the Swinomish and Skagit Rivers in order to better determine where the fish were traveling and when.

When scientists started looking at the Skagit River, they found a large, healthy bull trout population. Some of the fish in the Skagit had come from the Snohomish and were using both systems and traveling between them. When they couldn't find some of the fish in either system, they looked in the Swinomish

and found some were spending time there.

While papers on the outcome of the study are pending, scientists already know that bull trout are most active in the dredging areas in March through July and gone by the end of July. The existing blackout window established by the U.S. Fish & Wildlife Service is February through July, so the new findings support established work and blackout windows.

They looked at movement patterns, to see why they are staying in certain areas. Scientists looked at salinity, dissolved oxygen, tide, temperature and other factors. They found that anadromous bull trout appear most active on incoming and high tides, moving from one zone to another.

While the study allows some overall findings on bull trout behavior, Hart says, "they're each individuals," some swimming to their own rhythm.

For more information contact the Seattle District Public Affairs Office at (206) 764-3760.

Superfund

Continued from Page 9

using test pits allowed for a more complete design that saved costs in the possible unneeded procurement of a pre-engineered fabric structure to capture odors, which was originally thought to be needed for the project.

- The ability to look at the project as a whole, even before preliminary designs were complete, to minimize multiple utility relocations.

- Work with the community and the community advisory groups on road closures and utility disruptions to determine what the community will bear, to help reduce time and schedule impacts of end-to-end sequencing of work.

- Estimate and present to the EPA the cost of excavation support systems for the protection of homes versus the possible buyout of the home well before the work is necessary so that an informed decision can be made by the EPA resulting in a cost savings to the project.

The team also used many cost and time saving techniques, such as:

- Employing the PMBP Virtual Team concept.

- Coordination with all parties (EPA, Corps, Contractor, Utilities, Community, and local government) before design and construction

to avoid possible delays and impacts to the project.

- Using the correct contracting method (Cost Reimbursable versus Firm Fixed price) based on known scope and design detail, funding, and time constraints. Using Pre-placed Remedial Action Contracts (PRAC), Long Term Remedial Actions (LTRA) contracts, and large disposal contracts.

- Having a fully trained work force in other geographic residencies to allow for deployment of trained government oversight personnel as workload dictates.

- Strategically scheduling human capital resources for both necessary jobsite coverage and mandatory training requirements.

- Maintaining a consistent staff throughout the project.

- Combining resources from large-scale projects with smaller oversight projects.

- Maximum emphasis on Health and Safety related issues.

- Maintaining a close working relationship between the Corps on-site personnel and the ultimate customer – the individual property owners. This is especially critical in residential projects involving permanent and temporary relocations.

The project, which is expected to cost more than \$170 million, is scheduled for completion in 2007. The Federal Creosote Superfund Project was recently selected for the 2004 Chief of Engineers Honor Award for Environmental Projects.

More than 325,000 safety man-hours have been worked on-site without a single incident. The cost and time saving techniques, and the collaborative district approach, continues to mark success on projects in the region, most notably being the \$50 million Chemical Insecticide Corporation Superfund Site which involves the remediation and restoration of a former insecticide manufacturing site located in a commercial and residential area in Edison, N.J.

The Federal Creosote project is just one among many large-scale cleanups where the Corps and EPA Region 2 are actively using techniques at all levels of both organizations to insure continued success in a strategic partnership that benefits both agencies, and, more importantly, our most important customers, the taxpayers for whom we work.

For more information contact the North Atlantic Division Business Management Division at (718) 765-7046.

Cleanups need an exit strategy

By DAVE BECKER

Hazardous, Toxic, and Radioactive Waste Center of Expertise

Remedial or corrective actions are means to an end – a site that is clean or suitable for its ultimate use.

The sometimes long and arduous path to this end is not clearly defined for many sites. In fact, often little thought is given to what must be done once extraction or containment system construction is complete and operations begin.

The project delivery team needs to develop a logical approach or “exit strategy” to reaching closure or completion.

The exit strategy represents a formalized long-range process for taking the site from its current state to closure or to its best long-term use.

The strategy represents a plan to actively manage the site and make decisions at various points to best tailor the remediation and monitoring efforts.

The strategy is best developed with regard to stakeholder and regulatory agency concerns, resource constraints, and technical realities, and includes well-defined means to measure progress and a desired timeline.

A well-written exit strategy contains:

- a statement of the remediation goals, a description of the future site land use,
- a decision tree, flow chart, or defined sequence of remedial activities,
- a clearly established process to evaluate performance measures relative to decision parameters,

■ provisions for periodic re-evaluation of the project goals and technologies, and

■ a means to verify clean up following cessation of active remediation.

Periodic reviews of overall site performance should include an evaluation of the exit strategy.

The project goals are typically defined in the decision documents for the site.

The goals need to be measurable and realistic and consistent with ultimate land use. Measurable goals include specific cleanup concentrations, acceptable risk levels, or hydraulic conditions (for long-term containment).

Realistic goals are those that are achievable with the current technology in a reasonable (as defined by all parties) time frame. If the goals are not measurable or realistic, a valid exit strategy may still be developed, but it becomes much more difficult to assess progress.

The PDT needs to develop an incremental approach to achieving closure or suitability for ultimate land use that is logical and realistic, both technically and from a regulatory perspective, and would result in (continuing) protection of current human and ecological receptors during remediation.

Various remediation activities, such as extraction from specific wells, use of a particular above-ground treatment process, or in-situ treatment of a source area, may be reduced or eliminated at points in the process prior to site closure or attainment of long-term goals as the site cleanup progresses.

Additional actions, such as additional extraction or treatment, may be identified as contingencies if the performance of the existing

system is not deemed adequate or if unexpected conditions are encountered.

The data collected by the monitoring program must be adequate to make these decisions. The strategy is often conveyed effectively using a decision tree or flow chart with specific metrics for evaluating cleanup progress. Target values and timeframes may be based on modeling.

The strategy should also include a specific approach to tailoring necessary monitoring frequency, location, and analyses. The exit strategy must include provisions for monitoring of response of the subsurface to the cessation of any remediation activity for some period of time.

There should be some contingency provisions for restart of the remediation process if some undesirable concentration “rebound” is observed.

Lastly, all pertinent PDT members should be aware of the exit strategy provisions and remediation objectives.

The PDT member(s) who reviews the monitoring data and makes recommendations or decisions about the continued operation of equipment or processes or about the monitoring program must be clearly identified.

Such a review should be evaluated to assure it occurs with adequate frequency, relative to the cost and protectiveness implications if adjustments are not made.

The process for proposing such changes to the regulatory agencies should also be identified and the extent to which actions can be taken without agency approval must be identified.

Depot wins People's Choice Award at environmental conference

Nearly 400 representatives from all levels of government, tribal organizations, community groups, academics and other stakeholders gathered in Denver June 15-17, for the U.S. Environmental Protection Agency's seventh annual National Community Involvement Conference.

The conference theme was “Going the Extra Mile: Meeting Community Needs.” Participants explored how community involvement can result in better environmental decisions.

The Pueblo Chemical Depot's Environmental Restoration Program was recognized through a poster competition that demonstrated the Army's public education and com-

munity involvement project in Avondale, Colo.

Conference participants voted PCD's poster the best and presented the “People's Choice Award” to Kathryn Cain, Chief, Pueblo Chemical Depot's Environmental Management Office, on June 17, during EPA's National Community Involvement Conference at the Hyatt Regency Hotel in Denver.

Three posters depicted the history of TNT contamination at the depot, the U.S. Army's response to contaminated groundwater that migrated offsite and affected private businesses and residences in Avondale, and how the Army worked closely with state regulators and resi-

dents to solve the problem.

Earth Tech, Inc, the USACE environmental contractor, and the Omaha District's Environmental Program Managers, Maureen Holland and Jerome Stolinski, worked closely with the Depot for a successful resolution.

The resolution included continuous delivery of emergency potable water to all residents in the area, numerous public meetings and the design and installation of the final remediation systems.

The Environmental Management Office was assisted in the competition by the US Army Corps of Engineers Omaha District and the public relations firm, Guild Communications.

Corps restores Lady Liberty's image

By JOANNE CASTAGNA
New York District

When millions of weary exiles reached the portal of the New World after months at sea, a tall, beautiful, and dignified lady, The Statue of Liberty, greeted them.

Still today, she is a living symbol of political freedom and democracy.

The New York District of the U.S. Army Corps of Engineers is helping to restore her image.

The National Park Service asked New York district to repair the Liberty Island seawall, "in the shadow of the great statue," said Anthony Ciorra, project manager, New York District.

Liberty Island is where the national monument stands. The 12.7-acre island sits in the Upper Bay portion of New York Harbor and is 1-5/8 land miles off of the southern tip of Manhattan Island.

History of Liberty Island

Liberty Island has a long history. Throughout the years, it's been called different names including "Minissais" by the Mohegan Indians, "Great Oyster," "Love Island," "Bedloo's Island," and today Liberty Island just to name a few and has had various owners such as Amsterdam, England, France, and the United States.

The island has served different purposes — as defense fortification to protect New York Harbor in the 19th century, as a temporary quarantine station during the smallpox epidemic, as a refuge for Tory sympathizers during England's occupation, and also as a summer home by a private owner.

In the late 19th century, the island was chosen to be the home for the statue, a gift of international friendship from the people of France.

The light green patina skinned lady stands 305 feet tall from the ground to the tip of her torch that she holds proudly in her right hand.

The torch when lit has a brightness equivalent to 2,500 times the effect of full moonlight.

In her left arm she cradles a tablet, against her 35-foot wide waist, with the inscription July 4, 1776, the date of America's independence.

On her head sits a crown with 25 windows and seven rays pointing upward.

The windows symbolize the gemstones of Earth and the seven rays represent heaven's rays shining over the seven seas and continents of the world.



Photo by Vincent Elias

The New York District is restoring the Liberty Island seawall.

She stands on an 89-foot high, granite pedestal that sits in the courtyard of the star-shaped walls of old Fort Wood, constructed years before as part of the harbor's defense fortification.

Each year, millions from around the world come to visit her. Some go up into her crown, either by elevator or by climbing 354 steps, to experience the spectacular view of the New York Harbor.

Restoring Lady Liberty's seawall

The National Park Service (NPS) is the present caretaker for the Statue of Liberty and her island.

On June 12, 2003, the NPS signed an agreement with the Corps' New York District to have it repair 340 linear feet of the 3,119 foot vertical, granite-faced concrete Liberty Island seawall that was originally constructed in the early 1800's and surrounds most of the island.

The repairs took place at locations where granite stones have fallen out of the seawall.

On September 29, 2003, the construction contract for the seawall repair was awarded to Perello Inc. of Lake Hopotcong, N.J.

Construction began in April 2004 and ended in June 2004.

"We repaired the seawall on the north and south side of the Liberty Island NPS shuttle dock located in the Southeast section of the island," said Ciorra. "We did this by first hydro blasting the exposed concrete on the seawall, in areas where seawall blocks have dislodged, in order to remove algae, moss and dirt and then manually removed old grout and loose disintegrated concrete.

"We also replaced the disintegrated concrete with Sulphate-Resistant Air Entrained Concrete that is resistant to the marine environment. We took the 36 existing large granite blocks that dislodged, cleaned them, and grouted and reset them back into the wall with mortar," he said.

"In addition, the entire 340 linear feet of seawall was cleaned and repointed beyond where the actual stones were dislodged and reset," said Brian Jackson, Project Engineer, New York District. "The stones that were dislodged and reset were actually only a small portion of the entire length of the wall."

Ciorra said, "The project team was very enthusiastic about working on the Liberty Island seawall. There is an added motivation for delivering a high quality product because we are working on a national treasure."

For more information contact the New York District Public Affairs Office at (212) 264-1230.



Photo by Brian Jackson

Construction continues on the Liberty Island seawall.

District builds environmentally sustainable buildings

By JOAN MIER

Albuquerque District

The new Navajo elementary school in Prewitt, New Mexico doesn't look green but don't judge by appearances.

Beneath the earth-tone colors, it's green to the core—meeting tough environmental standards in areas ranging from the choice of site and materials to water conservation, energy use and indoor environmental quality.

This is the first building in the state and one of only 103 in the United States to achieve prestigious LEED™ certification from the U.S. Green Building Council.

Albuquerque District built the school in partnership with the Bureau of Indian Affairs and Bradbury Stamm Construction, of Albuquerque, using a design build contract.

It's the first of many high performance, environmentally sustainable buildings that will be constructed by the Corps because LEED, a voluntary, consensus-based national standard, is the way of the future.

What is LEED?

Members of the Green Building Council representing all segments of the building industry developed LEED and continue to contribute to its evolution. LEED was created to:

- Define "green building" by establishing a common standard of measurement.
- Promote integrated, whole-building design practices
- Recognize environmental leadership in the industry
- Stimulate green competition

- Raise consumer awareness
- Transform the building market.

Why go green?

The Department of Energy says schools spend more than \$6 billion a year on energy.

Most could save at least 25 percent a year with energy efficient design and usage. It costs more to design a "green building" but money is saved in the long run.

The Sustainable Building Task Force research estimates that an upfront investment of about 2 percent of construction costs typically yields life-cycle saving of more than 10 times the initial investment.

By following a sustainable building concept, the Albuquerque District incorporated ideas expressed in the USACE Environmental Operating Principles that call for the Corps to "strive to achieve Environmental Sustainability."

The BACA Dio'ay Azhi Consolidated Replacement School, which will serve more than 400 students in grades K—6, is a 79,000 square-foot single story school.

When the Corps started the project, LEED certification wasn't part of the plan.

Midway through the project, the BIA decided better buildings translate into better students and said it would pay an additional \$300,000 to get a "green" building.

For example, tests show that natural daylight improves the productivity of both students and adults, which creates a better learning environment, said Barbara Borgesen, project manager for the BIA.

Albuquerque District Project Engineer Kerry Homer said greening the building meant the de-

signers took advantage of the natural sunlight that is so abundant in New Mexico.

"We put six skylights in the gymnasium and one in the building's central core where the library is located," he said. "We also used controllable interior lighting that works much like a motion detector."

"Lights go off at night when the building is unoccupied and go on again when someone enters the building. The windows were given a low E-coating that reduces the amount of heat from the sun that enters the building, lowering cooling costs."

The building includes a variety of other environmentally sustainable features.

"We used low-water using plants in a xeriscaped landscaping design," Homer said. "Recycled materials were used in the building's construction including steel and in the interior dry-wall."

"Alternate fueling stations were also installed for vehicles using electricity. The school provides better indoor air quality by limiting sources of construction contaminants, and isolating dust and other pollutants."

"Achieving a successful LEED certification requires a committed project team and a key project team member committed to green project goals," said Kris Callon, a LEED Accredited Professional.

Homer said initially people driving by on Interstate 40 thought the new school was a new casino. "But the only thing we're betting on here is a better and brighter future for the students in their educational journey."

For more information contact the Albuquerque District Public Affairs Office at (505) 342-3171.

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